

MEDICINE

Four-Way Vaccine Adds Polio Antigen to DPT Shot

➤ A FOUR-IN-ONE immunization shot, offering protection against childhood's major diseases, has proven to be successful in trial tests.

The new vaccine protects children against polio, as well as whooping cough, diphtheria and tetanus, the three diseases for which pediatricians administer DPT vaccine.

The vaccine, known as QuadriGen, was developed by Parke, Davis & Company. It is not yet commercially available.

The four components of the vaccine are concentrated and provide effectiveness with three doses of one-half cubic centimeter (just over eight drops) of QuadriGen for each inoculation.

Children who participated in a preliminary test of the vaccine ranged in age from two and one-half months to five years.

As a result, it was found that the incidence of naturally acquired resistance to polio is low in seven- to nine-month-old infants. This low incidence indicates a need for vaccine inoculation prior to this age, the investigators report.

Injections of the vaccine produced good antibody response to the polio component, as well as to the other three antigens in the new vaccine in children from two and one-half months to five years of age. A fourth dose was found to be desirable for children younger than four months.

Three Detroit Health Department physicians, Drs. Joseph G. Molner, health commissioner; C. D. Barrett Jr., director of maternal and child health; and C. P. Anderson, deputy commissioner of health, medical service, conducted the trial in conjunction with Drs. E. A. Timm, B. I. Wilner, H. E. Carnes and I. W. McLean Jr., members of the Parke-Davis research staff. They collaborated to write a report on results of the test which appears in the *Journal of the American Medical Association* (June 28).

Science News Letter, July 12, 1958

MEDICINE

Plans to Control Leprosy In the Americas Discussed

➤ PLANS FOR a full-scale attack to control the spread of leprosy throughout the Americas were discussed at a seminar in Brazil.

The attack will be initiated by an exchange of treatment techniques and new drug results among 44 public health officials from 16 countries and territories in the Americas, Dr. Fred L. Soper, director of the Pan American Sanitary Bureau, regional office of the World Health Organization, said.

The estimated number of leprosy cases throughout the world is between 3,000,000 and 10,000,000. The number in Africa alone is estimated at 2,300,000 by Dr. F. J. C. Cambournac, WHO regional director for Africa.

In the Americas it is an important public health problem for a number of the countries and territories.

At present, four states, Texas, Louisiana, California and New York, lead the United States in number of reported cases of leprosy.

South of the border numerous cases make leprosy a very important health problem.

Dr. Edgar B. Johnwick, medical officer in charge of the world-famous leprosarium run by the U. S. Public Health Service in Carville, La., Dr. Fred Kluth, director of the division of training of the Texas State department of health, in Austin, Tex., and Dr. James A. Doull, noted leprosy expert of the Leonard Wood Memorial, represented the United States at the seminar which lasted from June 30 through July 7.

There were also participants from Argentina, Brazil, British Guiana, Colombia, Cuba, French Guiana, Jamaica, Martinique, Mexico, Paraguay, Peru, Surinam, Trinidad, Uruguay and Venezuela.

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MEDICINE

Problem Child Aided By New Drug

➤ A NEW anti-depressant drug has been developed for the "problem" child.

The drug, called Deaner, seems to aid the progress of social adaptation and scholastic functioning for children with behavior problems, results of a recent study indicate.

Most of the 108 children in the study were overactive, overirritable, had a short attention span, and were doing poorly scholastically. All of the children had behavior problems severe enough to make them socially unacceptable. Also, as a group, they were emotionally unstable, unpredictable and unadaptable. Their ages ranged from six months to 20 years.

The drug proved beneficial in 68% of the group studied. The children had taken the drug from four weeks to nine months. Those children who benefited from the drug began to act in more socially accepted patterns and learning in school improved, according to Dr. Leon Oettinger Jr. of the department of electroencephalography, St. Luke's Hospital, Pasadena, Calif. Dr. Oettinger conducted the bulk of the clinical studies and presented his results before the American Encephalographic Society meeting in Atlantic City, N. J.

At least ten children responded with excellent results, he said. Several children showed definite improvement in all school subjects within a single grading period, usually six weeks. In many cases, the ease and speed of reading was greatly increased.

For most patients, Dr. Oettinger noted, Deaner appeared to be superior to meprobamate, captodiamine, phenothiazine, reserpine and other agents previously used.

In addition, the use of the drug did not inhibit the attention of the child by creating drowsiness. Deaner is a para-acetamidobenzoic acid salt of 2-dimethylaminoethanol, sold only by prescription.

Deaner is manufactured by Riker Laboratories of Los Angeles.

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IN SCIEN

OCEANOGRAPHY

Ocean "River" Mapped Below Equatorial Current

➤ A NEW SWIFT-FLOWING "river" as strong as 1,000 Mississippi has been measured hidden in the depths of the South Pacific Ocean.

Speeding along three times as fast as the surface current, the south equatorial current, this new river flows eastward along the equator for at least 3,500 miles. Scientists have mapped its dimensions and found that it is some 250 miles wide and 1,000 feet deep.

"This is one of the great oceanographic discoveries of our time," Dr. Roger Revelle, director of the University of California's Scripps Institution of Oceanography, La Jolla, Calif. said.

Scripps scientists working in cooperation with the U. S. Fish and Wildlife Service's Pacific Oceanic Fishery Investigations recently spent almost two months at the equator studying the undercurrent. Tests and measurements of the direction, flow and other characteristics of the new subsurface current were made from the research vessels Horizon and Hugh M. Smith.

So far the current has been measured only half-way across the ocean.

Oceanographers believe it is probably an important mechanism for making the equatorial waters one of the most fertile fishing grounds in the world.

The current was actually first discovered in 1952 by the late Townsend Cromwell, a Fish and Wildlife scientist who was investigating fishing methods. In his honor, John A. Knauss, scientific leader aboard the Horizon, hopes the new current will be named the Cromwell Current.

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ASTRONOMY

Age May Not Be Cause Of Difference in Galaxies

➤ GALAXIES in the universe may vary in their development due to differences not yet understood instead of differences in age, a University of Chicago astronomer has reported.

While there may be age differences between two galaxies, it is possible that the evolutionary progress of the stars in different galaxies proceeds at differing rates, William W. Morgan, professor of astronomy at Chicago's Yerkes Observatory located at Williams Bay, Wis., said.

All galaxies may be the same age, but evolving at various rates for reasons not yet understood, such as the proportions of elements of which their stars are composed, he told scientists at the American Astronomical Society meeting in Madison, Wis.

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CE FIELDS

ASTRONOMY

Discover Sun Spotted With Minute Sunspots

► THE SUN is dotted with tiny, stable sunspots, Dr. J. D. Bahng of the Princeton University Observatory told the American Astronomical Society meeting in Madison, Wis.

The minute dark spots, called pores, were seen on high-resolution solar photographs taken from the stratosphere. In one series of time-sequence photographs lasting 47 minutes there was no noticeable change in the tiny sunspots' appearance.

This has led Dr. Bahng to conclude the pores are extremely stable. He also contrasted them with granules, mysterious turbulences on the face of the sun, some of which measure 500 miles wide.

The average lifetime of the granules, seen on the same series of solar photographs, was found to be of the order of five minutes.

The stability of the pores, Dr. Bahng concluded, suggests that they have no direct connection with the granulation taking place on the surface of the sun.

It also lends support, he said, to an earlier view that the pores are indeed extremely small sunspots.

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MEDICINE

Brain-Blood Barrier May Impede Help of Drugs

► MANY of the drugs used in the treatment of brain tumors and inflammations in the nervous system may be impeded by a brain-blood barrier.

Many substances pass much more readily from blood stream into the fluids of other tissues than they do into the brain and nervous system fluids, Dr. Robert D. Tschirgi of the University of California Medical Center reported at an American Chemical Society meeting in Madison, Wis.

The barrier itself, intended by nature to protect the brain and nerve centers, may be made up of two parts, the associate professor of physiology explained.

One part consists of the cells in the walls of the brain's blood capillaries that are so thickly arranged that they are more "leak-proof" than capillaries elsewhere.

The other part is in a special membrane of nerve cell material wrapped around the brain capillaries. Each part screens certain materials in the blood plasma.

In addition, electron micrographs of the cerebral cortex, brain covering, show there are no large-scale extra-cellular gaps or spaces. Therefore, this close packing of cells in the brain covering means that substances leaving the blood vessel compartment could do so only by entering these cells.

Thus far, this barrier can be broken

down in animals only by means so drastic that they are fatal, Dr. Tschirgi said.

Various tissues of the body receive nourishment and dispose of waste matter through an interchange with the blood. In the case of the central nervous system the exchange process is slower and more selective than for most other tissues, the scientist explained.

Water moves freely between blood plasma and the central nervous system; sugars penetrate the brain slowly. Proteins rarely enter at all, while various other water-soluble substances differ in their rates of penetration but are slower than in other tissues, he concluded.

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MEDICINE

New "Light Up" Method Spots Contagious Disease

► A FLUORESCENT technique that promises to enable the physician to make an accurate diagnosis of certain communicable diseases within minutes after the patient enters his office has been developed.

This new diagnostic method uses a fluorescein dye to "light up" individual disease organisms.

The dye labels, or tags, the serum antibodies which are specific against a particular disease organism. Specimens from the patient are then stained with this tagged antibody solution.

If the specimen contains an infectious organism related to the tagged antibody, the organism will glow with a greenish light when observed through a microscope under ultraviolet light.

This technique may now make it possible to diagnose Group A streptococcal throat infections within a few minutes, instead of the usual three to five days required by conventional laboratory methods, Dr. Max Moody of the Communicable Disease Center, U. S. Public Health Service, pointed out.

This would permit the doctor to administer adequate treatment earlier in cases of Group A strep throat and thereby prevent many cases of rheumatic fever and kidney disease.

The fluorescent technique was also found beneficial in identifying specific bacteria which cause common dysentery, Dr. E. H. LaBrec, Walter Reed Army Institute of Research, reported to scientists attending the Society of American Bacteriologists meeting in Chicago.

Mrs. Berenice Thomason and co-workers at the U. S. Public Health Service Communicable Disease Center, applied the technique to identification of various Salmonella bacteria, such as the one which causes typhoid fever.

She emphasized that extreme caution must be exercised in the selection of testing solutions used in identifying these organisms, because of cross-reactions among the various groups of enteric bacteria.

Three other groups of scientists are also working on applications of the diagnostic technique.

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PHYSICS

"Liquid String" Study Aids Research on Fibers

► THE PROBLEM of how to tie a length of "liquid string" has been solved, a scientist at The Johns Hopkins University reports.

One result may be better nylon stockings, dacron shirts and orlon sweaters. Synthetic fibers are liquid plastic compounds that are formed into threads by drying thin streams of the liquid.

Dr. Jerome Gavis, assistant professor of chemical engineering, has set up a relatively simple laboratory apparatus that actually permits him to observe the tensions and other characteristics of a thin stream of liquid when it is "tied" at both ends.

The apparatus consists of a glass casing eight feet long and five inches in diameter, a slender steel nozzle and tube attached to a pressure system, an electromagnet that causes the flexible tube to vibrate at any given rate, and a camera equipped with high-speed electronic flash.

A heavy, viscous, or gooey, liquid, carboxymethyl-cellulose in water, is squirted out through the nozzle. Its action is stopped in mid-flight by using the camera's stroboscopic light.

So far experiments have shown that the liquid stream has some characteristics in common with a true string, such as a plucked violin string. It is composed of a variety of waves, has nodes and is affected by speed, the liquid's viscosity and the diameter of the nozzle opening.

While Dr. Gavis reports "We've barely begun to make headway with this project," results of the experiments may help to produce better synthetic fibers.

Manufacturers need better information on when the liquid stream used to make these fibers should be dried and how fast the drying should take place.

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BIOLOGY

Roosting Bats May Help Carve Out Caves

► ROOSTING bats may be an important factor in cave formation, particularly where the rock is soft.

The bats could wear away cavities in the soft walls as they jostle each other trying to secure preferred positions for roosting. Evidence for this was found in three bat-infested caves in Trinidad where W. A. King-Webster and J. S. Kenny of the fisheries department, Port-of-Spain, Trinidad, B.W.I., made their observations.

They measured numerous bell-shaped cavities in dry areas of the cave roof. During the day the upper part of these were lined with closely packed layers of sleeping bats. The lowest and oldest part of the cavities would have received the most wear from climbing bats, the scientists report, and could be expected to have a greater diameter.

Details of their study appear in *Nature* (June 28).

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